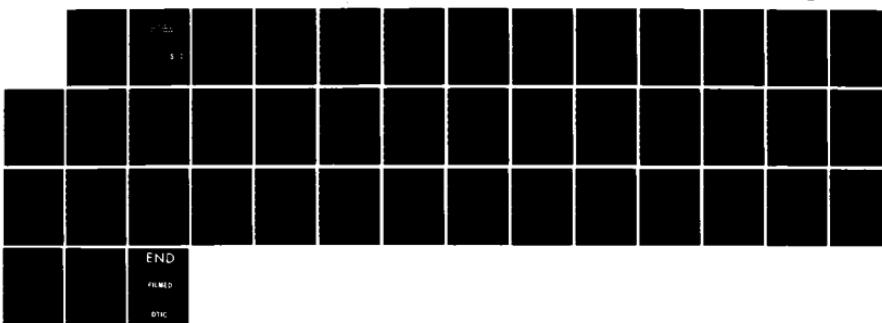
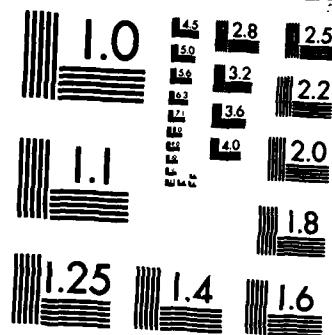


AD-A153 095 AIRPORT AND AIRWAY SYSTEM COSTS AND USER COST
RESPONSIBILITY VOLUME 1 SUMMARY REPORT(U) MITRE CORP
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AD-A153 095

**MITRE Technical Report
MTR-7610
Volume 1**

Summary Report: Airport and Airway Costs and User Cost Responsibility

Dr. A. N. Sinha

SEPTEMBER 1977

CONTRACT SPONSOR	FAA/AVP
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A large, stylized stamp in black ink. The word 'DTIC' is at the top in a bold, blocky font. Below it, 'ELECTE' is written in a smaller, more elegant script font. To the left is a large, bold letter 'S' and to the right is a large, bold letter 'D'. In the center, the date 'APR 29 1985' is stamped. At the bottom center is a stylized signature that looks like 'A' or 'SA'. The stamp has a slightly distressed, high-contrast appearance.

This report was prepared by The MITRE Corporation for the Office of Aviation Policy, Federal Aviation Administration under Contract No. DOT FA69NS-162. The contents of this report reflect the views of The MITRE Corporation, which is responsible for the facts and the accuracy of the data presented herein, and does not necessarily reflect the official views or policy of the FAA. This report does not constitute a standard, specification, or regulation.

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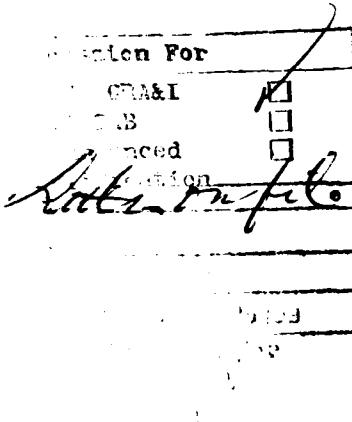
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ABSTRACT

This document summarizes research performed by The MITRE Corporation and Administrative Sciences Corporation for FAA's Office of Aviation Policy on present and future airport and airway costs and user cost responsibility. Cost projections and allocations are provided for the period 1977-1986. The results are intended as inputs to an FAA analysis of airport and airway system financial policy.

The summary report presents an overview of the study effort and its findings. Specific technical supporting details are presented in the following documents:

1. Airport and Airway Cost Projections: 1977-1986, Part I: Development of FAA Costs, MTR-7610, Volume II.
2. Airport and Airway Costs Incurred in the Public Interest, MTR-7610, Volume III.
3. Airport and Airway System Cost Allocation, MTR-7610, Volume IV.
4. Minimum General Aviation Airport and Airway System Requirements, MTR-7610, Volume V.
5. Review of the 1973 Airport and Airway Cost Allocation Study, MTR-7610, Volume VI.
6. Airport and Airway System Cost Allocation Model: Users' Manual, MTR-7610, Volume VII.
7. Airport and Airway Cost Projections: 1977-1986, Part II: An Econometric Model for Cost Projections, ASC R-112.
8. Airport and Airway Costs Incurred in Servicing Small Communities, ASC R-113.



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1. INTRODUCTION

The Federal Aviation Administration has an annual budget of approximately \$2.5 billion that funds the maintenance and provision of airport and airway services and facilities, provides grants for airport development, and supports regulatory activities in airport safety, environment, aviation medicine and certification of various elements of the ATC System. This report presents projections of these FAA costs and their allocation to users for the period 1977-1986. The results are intended as inputs to an FAA analysis of airport and airway system financial policy.

1.1 Background

In response to a Congressional directive in the Airport and Airway Development Act of 1970, the Department of Transportation (DOT) concluded a comprehensive cost allocation study [Reference 1] in 1973. This study covered the period of 1966-1975 and had three major conclusions and recommendations:

1. The allocation of total airport and airway cost was 50% to air carriers, 30% to general aviation, and 20% to the military and the Government.
2. There was a substantial deficit between the allocated costs and revenues, particularly for general aviation.
3. There should be a shift in the tax structure to reflect cost recovery of allocated costs to the users.

The findings of the 1973 Cost Allocation Study and the concept of full cost recovery were disputed strongly by some user groups, especially by the general aviation community. The majority of the user's comments dealt with the cost recovery phase and an opposition to the concept of full cost recovery through increased taxation. Two suggested improvements to the cost allocation phase were repeatedly cited. The first dealt with the identification of costs incurred in public interest to the benefit of the nation as a whole. It was contended that these costs were large and should not be attributed to the users of the airport and airway system but rather to the public sector. The second

2. DEVELOPMENT OF THE COST BASE

Projections of FAA costs cover the period 1977-1986. These projections used the cost classifications of the FAA budget categories presented in Table 2-1. Details of the cost projection methodologies and related discussions are presented in Volume II of this report [Reference 2] and in a supporting report prepared by Administrative Sciences Corporation [Reference 8]. Future FAA costs were estimated for two alternative scenarios:

1. Baseline Projections. Existing functional and statistical relationships between system costs and aviation activity levels are assumed to continue in the future.
2. Alternative Projections. Future relationships between system costs and aviation activity is assumed to change as a result of increased controller productivity, reduced equipment O&M costs and increased F&E expenditures associated with new FAA Engineering and Development (E&D) products now under development.

The baseline projections utilize an econometric model based upon empirically derived relationships between capital, labor and aviation activity levels. In those costs areas where such relationships cannot be satisfactorily established, long-run budget trends and other relevant factors (as appropriate) were used to project future costs.

The alternative projections were derived by making appropriate modifications of the baseline projections to reflect both the increases in F&E costs for new equipment, and the resultant decreases in O&M costs. The projected changes in cost relationships are based on expected staffing reductions due to increased controller productivity in addition to planned reductions in equipment O&M due to modernization programs.

The projected ten year costs (FY77-FY86) under both scenarios were estimated in constant FY76 and in current dollars. The results are presented in Tables 2-2 through 2-5. The costs shown treat capital costs

TABLE 2.2
BASELINE TOTAL COSTS
FY78 CONSTANT DOLLARS (MILLIONS)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
BBB	69.6	74.3	74.3	74.3	74.3	74.3	74.3	74.3	74.3	74.3	
FSS	CHARTERS TOMERS PS	43.8 78.4 15.4 33.9 16.9	54.4 67.7 9.0 63.8 27.4	65.2 80.6 37.9 51.5 27.4	97.7 90.0 80.4 51.5 27.4	75.9 94.2 82.6 52.3 27.4	43.4 79.5 84.0 47.2 27.4	54.2 75.3 86.6 45.5 27.4	59.5 76.2 81.1 43.9 27.4	70.3 73.9 33.9 42.3 27.4	
	TOTAL FSS	188.4	202.8	275.6	307.1	292.5	241.5	239.1	248.2	247.8	238.8
OSB	CHARTERS CHARTERS TOMERS TOMERS PS	293.0 181.9 280.6 158.4 107.2	291.3 196.7 290.8 158.1 107.2	299.1 197.7 300.0 155.4 107.2	302.7 206.0 311.9 162.2 105.0	321.0 218.5 325.4 169.9 102.9	325.3 228.2 339.6 178.0 100.7	343.5 233.0 350.4 184.2 98.6	353.7 240.7 360.1 189.7 96.5	368.9 248.4 369.6 195.2 94.3	378.1 257.4 378.6 200.4 92.2
	TOTAL OSB	1087.6	1099.8	1124.1	1153.5	1205.1	1250.6	1280.0	1311.1	1346.1	1379.4
SUPPORT	ADS P SI ADS R&D DEV DIR ADP DIR CHARTERS DIRS, S&S	136.1 142.3 6.5 6.7 18.9 71.6 160.0	146.3 150.7 9.1 7.6 23.6 81.3 146.3	147.0 158.7 9.3 7.6 24.7 82.9 148.6	150.2 158.6 9.5 7.6 24.1 85.0 151.6	158.7 163.4 9.8 7.6 25.0 88.7 157.0	165.7 168.5 10.5 7.6 25.5 92.0 161.6	170.3 173.1 10.9 7.6 26.0 94.1 164.6	175.2 176.8 11.2 7.6 27.6 96.5 168.1	180.3 186.6 11.5 7.6 27.6 98.6 168.1	185.8 186.6 11.5 7.6 27.6 101.4 171.5
	TOTAL SUPPORT	526.9	562.8	574.3	588.0	610.2	631.4	646.8	661.9	678.6	695.2
FSSB		20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	
SPL CAP AF		28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	
CHARTS		490.9	488.6	484.8	479.7	465.7	463.0	461.4	463.7	459.7	
TOTAL		2410.1	2477.0	2501.2	2651.3	2695.5	2750.3	2807.9	2853.2	2892.4	

TABLE 24
ALTERNATIVE TOTAL COSTS
FY78 CONSTANT DOLLARS (MILLIONS)

		1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
NSD		69.6	74.3	74.3	74.3	74.3	74.3	74.3	74.3	74.3	74.3
162	CERTBS	83.8	55.0	69.0	39.0	42.0	63.0	37.0	61.0	103.0	116.0
	SOUBS	78.4	76.0	107.0	104.0	107.0	133.0	149.0	122.0	117.0	115.0
	PSS	15.4	43.0	49.0	55.0	63.0	57.0	39.0	32.0	17.0	17.0
	BANADS	33.9	50.0	73.0	94.0	89.0	71.0	80.0	90.0	66.0	62.0
	OTRBS	16.9	26.0	28.0	25.0	27.0	29.0	32.0	36.0	31.0	35.0
	TOTAL 162	188.4	250.0	306.0	317.0	328.0	333.0	337.0	363.0	354.0	365.0
058	CERTBS	0FS	293.0	297.3	299.1	302.7	300.0	298.1	283.9	276.3	288.9
	CERTBS	RAIBT	811.9	110.7	197.7	206.0	218.5	228.3	233.6	230.7	237.6
	SOUBS	0FS	284.6	290.0	300.0	311.9	316.0	320.2	323.3	321.6	315.6
	TOUBS	RAIBT	158.4	150.1	155.1	162.2	169.9	178.0	186.2	189.7	195.2
	PSS	107.2	107.2	107.2	105.0	102.9	100.7	98.6	96.5	98.3	92.2
	OTRBS	0FS	37.5	36.2	38.2	38.2	38.2	35.7	33.1	30.6	30.6
	OTRBS	RAIBT	25.1	25.6	26.5	27.6	25.3	22.9	20.0	20.9	22.9
	TOTAL 058	1007.6	1099.6	1124.4	1153.5	1168.3	1177.3	1172.4	1176.2	1159.4	1199.5
	SUPPORT	168	136.1	386.3	187.9	150.9	151.3	151.0	148.8	147.0	138.2
	ADM P. ST	642.3	150.7	154.7	158.6	163.4	168.5	173.1	176.8	181.7	186.6
	ADM MED	6.5	9.1	9.3	9.5	9.8	10.5	10.9	11.2	11.5	11.9
	DEV DIA	6.7	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
	A-P ADS	18.9	23.6	24.1	24.7	25.0	25.5	26.0	26.6	27.2	27.6
	CHEF TBS	71.6	81.3	82.9	85.0	86.5	87.5	87.6	87.9	86.1	85.9
	DIA. 545	160.8	166.3	168.6	151.6	153.6	155.0	155.0	155.2	152.3	151.9
	TOTAL SUPP	526.9	562.7	576.3	586.0	597.2	605.6	609.0	612.3	608.6	606.3
286D		20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
	HTL CAF AP	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
	GRADS	490.9	486.6	484.8	479.7	465.7	463.0	461.4	463.7	459.7	455.1
	TOTAL	2410.1	2524.2	2612.2	2661.2	2682.2	2701.9	2702.5	2718.2	2652.8	2678.9

(F&E) as current expenses. This is consistent with annual governmental budget and appropriations cycles. Details of alternative treatments, cost projections methods and cost escalation indices are presented in Volume II [Reference 2]. The baseline projections (in constant FY76 dollars) show an increase in total costs from \$2.41 billion to \$2.89 billion over the ten year study period. The impact of increased productivity and reduced O&M costs is more pronounced in the later years and is reflected in a projection of the total cost of \$2.68 billion in FY86 under the alternative projections. The projections in current dollars range from \$2.59 billion in 1977 to \$4.69-\$5.07 billion in 1986 for the alternative and baseline projections, respectively.

3. COSTS INCURRED IN PUBLIC INTEREST

Before allocating the projected costs to the users of the airport and airway system, appropriate reductions should be made to reflect those costs which are incurred by FAA in the public interest. Such costs should not be allocated to the aviation users, but should be borne by the general public. In addition, it is appropriate to exclude certain directly recoverable costs from the cost base. Volume III of the series [Reference 3] presents a complete discussion of those reductions to the cost base that were made before applying the cost allocation process.

The analysis revealed that the following costs should be borne by the general public or recovered directly from specific users at the time the service is dispensed:

1. Costs of providing ATC services to support subsidized air transportation service to small communities.
2. Costs of satisfying military requirements of ATC system elements.
3. Costs of providing weather data to nonaviation users through National Oceanic and Atmospheric Administration (NOAA).
4. Costs associated with research and regulatory activities in the area of safety, medicine and environment, and certain directly recoverable related costs.
5. Costs of operating the National Capitol Airports.

The U.S. Government provides financial assistance to some air carriers to ensure adequate air service to small communities. A number of these airports currently have air traffic control towers and related terminal ATC services that would not have been provided in the absence of subsidized air service. Hence, the existence of these ATC services is directly linked to the public desire to support air service to small communities. Consequently, the costs of providing such services should be allocated to the general public

National Capitol Airports are financed through airport charges. Costs associated with their operations should be recovered from the users of those facilities and not the general users of the airport and airway system.

Tables 3-1 and 3-2 present a summary of the cost estimates of the reductions in the cost base in constant FY76 and current dollars. In constant dollars, the total reductions increase from \$395 million in 1977 to \$463 million in 1986. In current dollars, the cost estimates are \$426 million in 1977 to \$817 million in 1986. Further details are provided in Volume III of the report [Reference 3].

TABLE 3-2
SUMMARY OF REDUCTIONS IN FAA COST BASE
(IN MILLIONS OF CURRENT DOLLARS)

Elements	Year	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Service to Small Communities	42.1	44.7	47.2	49.9	52.8	55.7	58.7	61.8	65.3	68.8	
Military Requirements	84.0	90.6	96.6	103.2	110.4	120.5	130.3	138.9	150.3	161.5	
Nonaviation Use of Weather Service	26.1	28.3	30.5	32.8	35.5	38.8	42.2	46.1	50.4	54.6	
Safety, Environment & Medicine	243.3	268.5	288.8	310.3	335.2	362.1	389.1	416.4	448.8	482.0	
National Capital Airports	30.6	32.5	34.3	36.3	38.4	40.5	42.7	45.0	47.5	50.1	
Total	426.2	464.5	497.6	532.6	572.3	617.6	663.1	708.2	762.4	817.1	

4. COST ALLOCATION METHOD

The selection of an appropriate cost allocation method involves issues of economic allocative efficiency, equity arguments, ability to pay, and other factors.

The 1973 Cost Allocation Study [Reference 1] analyzed ten cost allocation methods and selected a long run marginal cost approach. Under this procedure, system variable costs were allocated to the users by taking the product of their long run marginal cost (additional cost of serving one more unit of the given user class) and the activity level (number of users). The residual costs were allocated in the same proportion as the variable cost shares.

The current analysis examined alternative cost allocation methods in four broad categories: marginal/incremental cost methods, average cost methods, value of service methods, and combined methods. Details are presented in Volume IV of this series [Reference 4]. These categories included the ten methods of the 1973 study and further modifications. The best method of allocating costs to users was determined to be a hybrid of a modified long run marginal cost (LRMC) approach and engineering models. The resulting allocation assigns all airport and airway costs to users. The modification to the LRMC consisted of allocating the residual costs in inverse proportion to the users' price elasticity of demand of ATC services. This modification is related to benefits and marginal opportunity costs and has a strong theoretical support. The desirable properties of the modified LRMC can be further enhanced by substituting engineering models where econometric techniques prove unsatisfactory in providing a causal relationship between usage and costs.

This aspect becomes particularly important in allocating capital expenditures in an environment of changing technology.

R&D and F&E costs were allocated to various users based on an analysis of estimated user cost responsibility of program elements appropriately aggregated to represent percentage shares of the system users for the various budget categories. This approach provided a better causal relationship than LRMC estimates of R&D and F&E cost responsibilities. O&M costs were allocated

TABLE A-2
(CONTINUED)

ALLOCATION OF FY64 BASELINE PROGRAM COSTS
CURRENT DOLLARS IN MILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	MIL/GOVT
R&D	917.7	2.4	73.8	28.8	12.7
PER					
CENTERS	93.4	0.0	67.2	9.3	16.8
TOPERS	114.5	2.3	60.6	37.0	14.6
FSS	58.0	0.0	2.9	55.1	0.0
DAVIDS	62.0	0.0	33.5	20.5	8.4
OTHER	38.8	0.0	26.0	12.8	0.0
TOTAL PER	366.7	2.3	190.2	134.8	39.5
OPR					
CENTERS	941.6	87.4	447.6	264.2	142.4
TOPERS	870.9	64.0	398.2	360.8	47.8
FSS	152.8	5.7	7.3	125.1	14.7
OTHER	111.6	9.8	48.0	42.2	8.5
TOTAL OPR	2076.8	167.0	900.1	792.3	206.4
SUPPORT					
16B	277.5	71.0	97.5	85.7	23.4
ADM P ST	280.0	280.0	0.0	0.0	0.0
ADM HED	17.7	17.7	0.0	0.0	0.0
LEV DIR	12.0	0.0	7.7	3.0	1.3
A-P ADM	42.1	3.2	33.3	5.6	0.0
CENT THB	152.8	39.8	54.0	46.4	12.6
DIR. S65	266.3	47.8	912.3	83.1	23.1
TOTAL SUP	1048.4	459.4	304.7	223.8	60.4
FEED	32.2	32.2	0.0	0.0	0.0
MTL CAF AP	45.0	45.0	0.0	0.0	0.0
GRANTS	740.0	0.0	632.9	107.1	0.0
TOTAL	4426.8	708.2	2102.7	1286.9	329.0
ADJUSTMENTS	0.0	0.0	21.0	-72.5	57.5
TOTAL	4426.8	708.2	2123.7	1214.4	380.5

TABLE A-2
(CONTINUED)
ALLOCATION OF FY82 BASELINE PROGRAM COSTS
CURRENT DOLLARS IN MILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	BIL/GOVT
BSD		106.0	2.1	66.4	26.0	11.4
FEE	CENTERS	62.3	0.0	44.8	6.2	91.2
	TOWERS	110.2	2.4	58.4	35.7	14.1
	FSS	58.0	0.0	2.9	55.1	0.0
	NAVAIDS	62.3	0.0	33.6	20.5	8.1
	OTHER	36.2	0.0	24.3	11.9	0.0
	TOTAL FEE	329.0	2.1	164.0	129.5	33.4
OSB	CENTERS	803.7	77.0	383.1	216.8	126.8
	TOWERS	738.1	56.6	340.9	297.4	43.2
	FSS	143.7	5.1	6.9	118.0	13.7
	OTHER	97.9	8.8	42.4	36.4	10.6
	TOTAL OSB	1783.3	147.6	773.0	668.5	194.2
SUPPORT	16B P ST	236.2	59.3	83.6	72.3	21.0
	ACB BBD	240.3	240.3	0.0	0.0	0.0
	CIV DIR	94.9	14.9	0.0	0.0	0.0
	A-P ADH	10.6	0.0	6.9	2.7	4.2
	CIV TBN	36.4	2.9	28.7	4.8	0.0
	DIR. SES	831.2	35.8	45.7	38.6	31.1
		230.5	43.1	96.8	70.0	20.6
	TOTAL SUP	900.4	396.3	261.8	168.4	53.9
FED		29.0	29.0	0.0	0.0	0.0
BTL CAP AP		40.5	40.5	0.0	0.0	0.0
GRANTS		675.0	0.0	577.9	97.1	0.0
	TOTAL ADJUSTMENTS	3863.1	617.6	1843.1	1109.5	292.9
	TOTAL	3863.1	0.0	18.4	-62.8	44.4
					1046.7	337.3

TABLE A-2
(CONTINUED)ALLOCATION OF PY80 BASELINE PROGRAM COSTS
CUBED DOLLARS IN MILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	ML/GOVT
R&D		94.9	1.9	59.5	23.2	10.2
PEI	CENTERS	126.0	0.0	90.7	12.6	22.7
	TOURS	113.2	1.9	60.1	36.7	84.5
	FSS	49.0	0.0	2.5	46.6	0.0
	NAVIDS	62.5	0.0	33.7	20.6	8.1
	CTHER	33.3	0.0	22.3	91.0	0.0
	TOTAL PEI	383.9	1.9	209.3	127.5	45.3
OSB	CENTERS	649.6	65.4	313.2	160.0	161.0
	TOURS	605.3	50.6	286.2	230.1	38.4
	FSS	134.1	4.6	6.5	180.2	92.6
	OTBRS	84.0	7.9	36.3	30.0	9.7
	TOTAL OSB	1473.0	128.5	642.2	530.3	172.0
SUPPORT	IGM	492.7	50.2	68.1	56.2	18.2
	ADM & ST	202.6	202.6	0.0	0.0	0.0
	ADM BBD	12.2	12.2	0.0	0.0	0.0
	DEV DIR	9.7	0.0	6.2	2.4	1.1
	A-P ADR	31.6	2.6	25.0	4.0	0.0
	CENT TRN	108.6	32.1	37.1	29.9	9.6
	DIR. SES	193.6	38.6	84.3	55.7	18.1
	TOTAL SUP	750.9	338.1	217.7	148.2	47.0
PEOD		26.0	26.0	0.0	0.0	0.0
ML CAP AP		36.3	36.3	0.0	0.0	0.0
GRANTS		625.0	0.0	537.9	87.1	0.0
	TOTAL	3389.9	532.6	1666.6	916.3	278.4
ADJUSTMENTS		0.0	0.0	16.7	-53.3	36.7
	TOTAL	3389.9	532.6	1683.2	863.0	341.1

TABLE A-2
(CONTINUED)

ALLOCATION OF PY70 BASELINE PROGRAM COSTS
CURRENT DOLLARS IN MILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	BIL/GOVT
R&D		85.0	1.7	53.3	20.8	9.2
PSB	CURRENTS	68.5	0.0	44.3	6.1	11.1
	OTHERS	75.5	1.7	39.8	25.4	9.6
	FSS	9.9	0.0	0.5	9.4	0.0
	BAVADS	46.6	0.0	26.2	16.0	6.3
	OTHERS	30.1	0.0	20.2	9.9	0.0
TOTAL PSB		225.4	1.7	131.0	65.8	27.0
OSB	CURRENTS	558.3	59.6	273.3	823.9	101.2
	OTHERS	508.4	43.6	241.8	684.5	34.5
	FSS	122.6	4.1	6.0	100.5	11.9
	CTBSA	72.9	7.4	31.8	25.0	9.0
TOTAL OSB		1259.2	114.6	553.0	433.9	156.6
SUPPORT	ISH	165.1	42.4	59.3	46.5	16.8
	ADB P ST	172.4	172.4	0.0	0.0	0.0
	ADB BBD	10.4	10.4	0.0	0.0	0.0
	EEV DIB	6.7	0.0	5.6	2.2	1.0
	B-P ADB	27.0	2.3	21.2	3.4	0.0
	CHB TBU	93.0	26.7	31.6	24.1	8.6
	DIB, SES	167.4	38.5	70.6	45.9	16.4
TOTAL SUP		603.6	290.7	188.2	122.4	42.7
PERD		23.3	23.3	0.0	0.0	0.0
BIL CAP AP		32.5	32.5	0.0	0.0	0.0
GRANTS		555.0	0.0	478.0	77.0	0.0
TOTAL ADJUSTMENTS		2623.2	464.5	1403.5	719.7	235.5
TOTAL		2623.2	0.0	1417.5	676.9	28.9
						264.3

TABLE A-1
(CONCLUDED)

ALLOCATION OF FY86 BASELINE PROGRAM COSTS
FY76 CONSTANT DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	HIL/GOV'R
PROD		74.3	1.5	46.6	18.2	8.0
PER	CENTERS WORKERS FSS	75.7 75.4 89.4	0.0 1.5 0.0	58.5 39.9 1.0	7.6 26.4 16.4	13.6 9.6 0.0
	NAVALIDS CIBERS	40.9 27.4	0.0 0.0	22.1 18.4	13.5 9.1	5.3 0.0
	TOTAL PER	236.0	1.5	135.8	72.9	28.5
OPS	CENTERS SOURCES FSS CIBERS	635.5 579.2 92.2 72.5	57.5 40.6 3.6 6.2	304.9 265.7 4.4 31.6	182.5 262.8 75.3 27.5	90.6 29.6 8.8 7.1
	TOTAL OPS	1379.4	108.4	606.6	528.3	136.4
SUPPORT	ISB ACM P ST ADS BBD EVY DIN S-P ABS CENT TBN EIB, S6S	165.0 186.6 11.9 7.6 27.6 101.4 175.3	97.9 186.6 11.9 0.0 2.0 25.4 30.2	65.8 0.0 0.0 4.9 21.9 36.8 74.9	57.3 0.0 0.0 1.9 32.7 31.6 55.5	14.8 0.0 0.0 0.8 0.0 6.1 84.7
	TOTAL SUP	696.2	303.7	204.3	149.8	38.3
PROD		20.3	20.3	0.0	0.0	0.0
HTL CAP AP		26.4	26.4	0.0	0.0	0.0
GRANTS		455.1	0.0	368.8	66.2	0.0
TOTAL ADJUSTMENTS		2692.4	462.6 0.0	1382.1 13.6	835.4 -47.2	211.3 33.4
TOTAL		2692.4	462.6	1396.0	788.2	248.7

TABLE A-4
(CONTINUED)

ALLOCATION OF FTE'S, BASELINE PROGRAM COSTS

		TOTAL	PUBLIC	A.C.	G.A.	BIL/GOVT
R&D		74.3	1.5	46.6	18.2	6.0
PSB	CHARTERS	59.5	0.0	42.9	6.0	10.7
	100%BS	76.2	1.5	40.4	24.7	9.7
	PS5	01.1	0.0	2.1	39.0	0.0
	BAWADS	43.9	0.0	23.7	14.5	5.7
	OTHER	27.4	0.0	18.4	9.1	0.0
	TOTAL PSB	248.2	1.5	127.4	93.2	26.1
OSB	CHARTERS	594.4	55.2	282.6	166.0	89.9
	100%BS	549.0	40.4	251.4	227.0	30.2
	PS5	96.5	3.6	4.6	79.0	9.3
	OTHER	70.4	6.2	30.3	26.6	7.3
	TOTAL OSB	1341.1	105.4	568.9	500.2	136.6
SUPPORT	160	175.2	44.0	61.5	54.1	15.0
	ADM P ST	176.0	176.0	0.0	0.0	0.0
	ADM HED	11.2	11.2	0.0	0.0	0.0
	DEV DIR	7.6	0.0	4.9	1.9	0.8
	A-1 ADB	26.6	2.0	21.0	3.6	0.0
	CHF TBN	96.5	25.1	35.9	29.3	8.0
	DEI, SCS	168.1	30.2	70.9	52.4	16.6
	TOTAL SUP	660.9	290.0	192.4	141.3	36.2
R&D		20.3	20.3	0.0	0.0	0.0
PSL CAF AP		28.4	28.4	0.0	0.0	0.0
GRANTS		463.7	0.0	396.5	67.1	0.0
TOTAL ADJUSTMENTS		2807.9	447.2	1331.6	820.0	208.9
TOTAL		2807.9	447.2	1331.6	820.0	208.9
		0.0	0.0	13.3	-46.1	32.8
		2807.9	447.2	1335.1	773.9	241.7

TABLE A-1
(CONTINUED)
ALLOCATION OF FY82 BASELINE PROGRAM COSTS
FY76 CONSTANT DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	BIL/GOVT
860		74.3	1.5	46.6	18.2	8.0
F62	CENTERS 1000BS	43.4 79.5	0.0 1.5	31.2 42.9	4.3 25.7	7.0 40.1
	FSS	46.0	0.0	2.2	41.8	0.0
	DATAIDS	47.2	0.0	25.5	15.6	6.1
	OTHER	27.4	0.0	18.4	9.1	0.0
	TOTAL F62	281.5	1.5	119.4	96.5	29.1
068	CENTERS 1000BS FSS CMB	563.6 517.6 600.7 68.6	54.0 39.7 3.6 6.2	268.7 239.1 4.6 29.5	152.0 208.5 82.7 25.5	88.9 30.3 9.6 7.9
	TOTAL 068	1250.6	103.5	592.1	468.8	136.2
SUPPORT	IGSA ACB P ST ACB ADD F2V DIP A-P ADD CMB TSP BIB, SCS	165.7 168.5 16.5 7.6 25.5 92.0 161.6	61.6 168.5 16.5 0.0 2.0 25.6 30.2	58.6 50.7 0.0 0.0 4.9 20.1 32.0 67.9	50.7 46.7 0.0 0.0 1.9 2.4 6.9 45.1	50.7 46.7 0.0 0.0 0.0 0.0 0.0 16.4
	TOTAL SUP	631.4	277.9	183.6	132.4	37.8
PROD		20.3	20.3	0.0	0.0	0.0
MTL CAP AP		28.4	28.4	0.0	0.0	0.0
GRANTS		463.0	0.0	396.3	66.6	0.0
TOTAL ADJUSTMENTS		2709.5 0.0	433.4 0.0	1288.0 112.9	782.2 -64.2	206.1 36.3
TOTAL		2709.5	433.4	1300.9	736.0	237.4

TABLE A-1
(CONTINUED)

ALLOCATION OF FY80 BASELINE
FY76 CONSTANT DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A-C.	G-A.	MIL/GOVT
ED		74.3	1.5	66.6	18.2	8.0
FCR	CENTERS	97.7	0.0	70.6	9.0	17.6
	TOURS	90.0	1.5	47.8	29.2	86.5
	FSS	40.4	0.0	2.0	36.4	0.0
	NAVALDS	51.5	0.0	27.6	17.0	6.7
	OTHER	27.4	0.0	16.4	9.1	0.0
	TOTAL FCR	307.4	1.5	166.4	103.4	35.8
OSB	CENTERS	508.7	51.2	245.2	125.3	86.9
	TOURS	474.0	39.6	226.1	160.2	30.1
	FSS	105.0	3.6	5.4	86.3	10.0
	OTHER	65.8	6.2	28.4	23.5	7.6
	TOTAL OSB	9153.5	900.6	502.9	415.3	934.7
SUPPORT	168	150.9	39.3	53.3	44.0	16.3
	ADB P ST	150.6	150.6	0.0	0.0	0.0
	ADB MED	9.5	9.5	0.0	0.0	0.0
	DFV DIS	7.6	0.0	4.9	1.9	0.0
	A-P ADB	26.7	2.0	69.5	3.2	0.0
	CFP TBB	85.0	25.1	29.1	23.4	7.5
	DIS, SES	151.6	30.2	63.7	43.6	18.2
	TOTAL SUP	588.0	264.8	170.4	116.1	36.8
PESD		20.3	20.3	0.0	0.0	0.0
PTL CAP AP		28.4	28.4	0.0	0.0	0.0
GRANTS		479.7	0.0	412.9	66.8	0.0
TOTAL ADJUSTMENTS		2651.3	417.1	1299.2	719.8	215.2
TOTAL		2650.3	417.0	1312.2	678.0	288.0

(CONTINUED)

TABLE A-1
 ALLOCATION OF FY78 BASELINE
 FY76 CONSTANT DOLLARS IN BILLIONS
 PROGRAM COSTS

		TOTAL	PUBLIC	A.C.	C.A.	BIL/GOVT
REC		74.3	1.5	46.6	16.2	8.0
P&E	CAPITAL	54.4	0.0	39.2	5.4	9.8
	TOURS	67.7	1.5	35.7	21.6	8.6
	FSS	9.0	0.0	0.4	0.5	0.0
	BAVARD	86.3	0.0	23.9	16.6	5.8
	OTHER	27.4	0.0	18.4	9.1	0.0
	TOTAL P&E	202.8	1.5	117.7	59.5	24.2
OPR	CHPRBS	400.0	52.3	238.9	100.3	86.5
	TOURS	460.9	38.1	211.4	96.3	30.9
	FSS	107.2	3.6	5.3	87.9	60.4
	OTHRB	63.7	6.2	27.6	21.6	7.9
	TOTAL OPR	1099.6	100.2	483.4	379.3	136.9
SUPPORT	IGU	844.3	37.1	51.6	80.7	14.7
	ADM P ST	150.7	150.7	0.0	0.0	0.0
	ADM BSC	9.1	9.1	0.0	0.0	0.0
	SHV DIS	7.6	0.0	4.9	1.9	0.8
	A-P ADR	23.6	2.0	18.6	3.0	0.0
	CIBT TBS	81.3	25.0	27.6	21.1	7.5
	DIS. SES	166.3	30.2	64.7	40.1	14.3
	TOTAL SUP	562.8	259.1	169.5	106.7	37.4
FIELD		20.3	20.3	0.0	0.0	0.0
	TTL CAP AP	28.4	28.4	0.0	0.0	0.0
GRANTS		488.6	0.0	420.7	67.8	0.0
TOTAL ADJUSTMENTS		2677.0	406.1	1232.9	631.6	206.8
TOTAL		2677.0	406.1	1232.9	631.6	206.8
				12.3	-37.6	25.3
				1245.3	594.0	231.7

APPENDIX A
ALLOCATION OF YEARLY PROGRAM COSTS TO USERS

The yearly allocation of program costs (R&D, F&E, O&M, etc.) for each scenario of baseline/alternative cost bases and constant/current dollars are presented in the following tables:

Table A-1: Allocation of Baseline Program Costs in Constant FY76 Dollars.

Table A-2: Allocation of Baseline Program Costs in Current Dollars.

Table A-3: Allocation of Alternative Program Costs in Constant FY76 Dollars.

Table A-4: Allocation of Alternative Program Costs in Current Dollars.

TABLE 5-3
COST ESTIMATES OF A HYPOTHESIZED CA-ONLY SYSTEM
(IN MILLIONS OF DOLLARS)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
In Constant FY76 Dollars	\$331.2	335.4	371.7	382.2	395.3	406.5	404.5	414.8	411.6	400.7
In Current Dollars	\$355.7	382.7	448.1	487.2	532.8	577.3	604.5	650.7	683.2	702.5

period in constant FY76 dollars. The ability of the system to accommodate a large relative increase in general aviation activity with little increase in costs indicates lower unit costs of ATC services to general aviation in future years.

5.2 Comparison with the Application of 1973 Cost Allocation Study Results

The present study allocates approximately 75% of the total FAA costs to the private sector (air carrier and general aviation). The application of the 1973 study findings also allocates about 75% to the private sector (after adjustment for the allowance of public interest costs in the 1973 study associated with safety regulations and national capitol airports). Within the costs allocated to the private sector, the relative proportions borne by air carrier and general aviation changes slightly from 63% : 37% in 1973 to 65% : 35% in the present study. Underlying these small changes in the proportional allocation is a much larger shift in the burden of unit cost allocations since the total number of general aviation operations using the ATC system has grown much more markedly than air carrier.

In the public sector, the total allocation is about 25% in both the 1973 study and the present analysis. There is, however, a substantial drop in the military share. The following factors are the major contributors to this difference:

1. In the 1973 study, there was steady decline in military costs over the years 1966-1975 with 20% being the average. This trend of decreasing military costs continues.
2. There is a decline of about 15% in military operations at FAA operated facilities between 1971 and 1981.
3. The relative magnitude of military activities to total operations show a dramatic decrease due to the projected increases in air carrier and general aviation activities. The share of military activities at FAA operated facilities has decreased by 30-60% when comparing 1971 vs. 1981 operations.

TABLE 5-2
COST ALLOCATION SUMMARY
CURRENT DOLLARS IN MILLIONS

	FY77	78	79	80	81	82	83	84	85	86
BASELINE COSTS										
Total	2587.1	2823.2	3116.8	3389.9	3647.4	3863.1	4125.8	4426.8	4752.7	5073.2
Public & Other	426.2	464.5	497.6	532.6	572.3	617.6	663.1	708.2	762.4	817.1
Air Carrier	1302.9	1417.5	1548.4	1683.3	1785.7	1861.6	1986.4	2123.8	2285.8	2448.7
General Aviation	609.9	676.8	782.9	862.9	960.5	1046.6	1118.4	1214.3	1299.6	1378.9
Military & Government	248.1	264.3	287.8	311.1	328.8	337.4	357.9	380.5	404.9	428.5
ALTERNATIVE COSTS										
Total	2587.1	2875.1	3152.8	3398.1	3622.5	3846.1	4044.1	4272.8	4473.3	4685.8
Public & Other	426.2	464.5	497.6	532.6	572.3	617.6	663.1	708.2	762.4	817.1
Air Carrier	1302.9	1427.3	1558.2	1664.8	1748.4	1839.3	1929.4	2038.9	2139.0	2229.6
General Aviation	609.9	715.2	806.3	893.0	982.9	1059.2	1111.0	1171.4	1208.1	1269.2
Military & Government	248.1	268.0	290.7	307.7	319.0	330.1	340.6	354.3	363.8	369.9

5. ALLOCATION OF COSTS TO USERS

A summary of the results of the cost allocation process is presented in Subsection 5.1, followed by a comparison with the application of the formula advanced by the 1973 study [Reference 1]. The results of the analysis of minimum general aviation airport and airway system requirements are discussed in Subsection 5.3.

5.1 Results of Cost Allocation for 1977-1986

Applying the selected hybrid cost allocation methodology to the projected cost bases* results in the user cost responsibilities as summarized in Tables 5-1 and 5-2. Further details are presented in Appendix A. The 1977 allocation assigns 16% of the costs as incurred in public interest, 50% to air carriers, 24% to general aviation and 10% to military and Government. The percent distribution shows little fluctuation over the years. The general distribution is as follows:

Public	- 16-17%
Air Carriers	- 48-50%
General Aviation	- 24-27%
Military and Government	- 8-10%

It is important to note that the underlying aviation activity forecasts for 1977-1986 [Reference 10] show no increase in military activities, approximately a 30% increase in air carrier activities, and a very high increase for general aviation (40% at FSS, 55-60% at towers, over 80% at en route centers). Over the same period, the projected percent increase in cost responsibilities of general aviation is significantly lower (less than 40%). Figure 5-1 shows a graphic representation of user cost responsibilities for the ten year

* Baseline projections assume existing functional and statistical relationships between system costs and aviation activity levels to continue in the future. Alternative projections account for a change in these relationships as a result of increased controller productivity reduced equipment O&M costs and increased F&E expenditures associated with planned FAA E&D products.

TABLE A-2
(CONCLUDED)

ALLOCATION OF FY66 BENCHMARK PROGRAM COSTS
CUBICREDI DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A-C.	G-A.	ML/GOVT
R&D		431.0	2.6	82.1	32.1	14.1
F&D	CINTERS	131.3	0.0	94.5	13.1	23.6
	10BERS	124.5	2.5	66.1	40.4	15.9
	FSS	30.0	0.0	1.5	28.5	0.0
	BAVADS	63.4	0.0	34.2	20.9	8.2
	OTHER	92.5	0.0	28.5	14.0	0.0
	TOTAL F&D	392.1	2.5	228.9	117.0	47.8
OSB	CINTERS	1120.4	101.4	537.5	324.8	159.7
	TOWERS	1028.1	71.9	468.5	428.1	52.6
	FSS	162.5	6.3	7.7	32.8	15.6
	OTHER	927.8	10.9	55.8	48.6	12.5
	TOTAL OSB	2431.8	190.6	1069.4	931.3	240.4
SUPPORT	16B	327.6	84.4	116.0	101.0	26.1
	ADM P ST	329.0	329.0	0.0	0.0	0.0
	ADM BBD	21.0	21.0	0.0	0.0	0.0
	DEV DIR	13.4	0.0	8.6	3.3	1.5
	B-P ADM	48.7	3.5	38.6	6.6	0.0
	CENT TAN	178.7	46.3	64.9	55.4	14.2
	DIRS. S65	309.0	53.2	132.0	97.8	25.8
	TOTAL SUP	1227.4	535.5	360.2	264.1	67.6
R&D		35.9	35.9	0.0	0.0	0.0
BL CAP AP		50.1	50.1	0.0	0.0	0.0
GRANTS		805.0	0.0	687.8	117.2	0.0
	TOTAL ADJUSTMENTS	5073.2	817.4	2424.4	1461.7	369.9
	TOTAL	5073.2	0.0	24.2	-82.7	58.5
	TOTAL	5073.2	817.1	2448.7	1379.0	428.4

TABLE A-3
(CONTINUED)
ALLOCATION OF FY78 ALTERNATIVE PROGRAM COSTS
FY76 CARRYOVER EXPENSES IN MILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	MIL/GOVT
86D	74.3	1.5	46.6	18.2	8.0
F&E					
CIFERS	55.0	0.0	39.6	5.5	9.9
TOERS	76.0	1.5	40.2	24.6	9.7
FSS	43.0	0.0	2.1	40.8	0.0
BAVIDS	50.0	0.0	27.0	16.5	6.5
CIFER	26.0	0.0	17.4	8.6	0.0
TOTAL F&E	250.0	1.5	126.4	96.0	26.1
06B					
CIFERS	486.0	52.3	238.9	908.3	88.5
TOERS	960.9	38.1	211.6	168.3	30.1
FSS	107.2	3.6	5.3	87.9	10.4
CIFER	63.7	6.2	27.6	21.8	7.9
TOTAL 06B	1099.8	100.2	483.4	379.3	136.9
SUPPORT					
168	144.3	37.8	51.8	40.7	44.7
ACB P ST	150.7	150.7	0.0	0.0	0.0
ACB BRD	9.1	9.1	0.0	0.0	0.0
DIN DIN	7.6	0.0	4.9	1.9	0.8
A-P ADD	23.6	2.0	18.6	3.0	0.0
CIFER TBN	88.3	25.1	27.6	21.1	7.5
DIB. S65	946.3	30.2	61.7	40.1	14.3
TOTAL SUP	5622.7	254.1	164.5	106.7	37.3
F22D					
	20.3	20.3	0.0	0.0	0.0
MIL CAP AP					
	28.4	28.4	0.0	0.0	0.0
GRANTS					
	406.6	0.0	420.7	67.8	0.0
TOTAL	2524.2	406.1	1241.7	668.1	208.3
ADJUSTMENTS	0.0	0.0	12.4	-39.1	26.7
TOTAL	2524.2	406.1	1254.1	628.9	235.1

TABLE A-3
(CONTINUED)

ALLOCATION OF FY80 ALTERNATIVE PROGRAM COSTS
FY76 CONSTANT DOLLARS IN BILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	MIL/GOVT
860	74.3	1.5	46.6	16.2	8.0
762	CENTERS TOWERS PSS BAVADS OTHER	39.0 104.0 55.0 98.0 25.0	0.0 1.5 0.0 0.0 0.0	26.4 55.3 2.7 50.8 16.7	33.9 33.8 52.2 31.0 8.2
	TOTAL 762	317.0	1.5	153.7	129.2
068	CENTERS TOWERS PSS OTHER	508.7 678.0 105.0 65.0	51.2 39.6 3.6 6.2	245.2 228.4 5.1 28.4	125.3 180.2 86.3 23.5
	TOTAL 068	1453.5	100.6	502.9	415.3
SUPPORT	168 ADM P SR ADM BHD EVN DIS A-P ADD CIST TBN EVN. SES	850.9 858.6 9.5 7.6 26.7 85.0 151.6	39.3 158.6 9.5 0.0 2.0 25.1 30.2	53.3 0.0 0.0 4.9 19.5 29.4 63.7	46.0 0.0 0.0 14.9 31.2 23.4 43.6
	TOTAL SUP	588.0	264.6	170.4	116.1
FED		20.3	0.0	0.0	0.0
BAL CAP AP		26.4	0.0	0.0	0.0
GRANTS		479.7	0.0	412.9	66.8
TOTAL	2661.2	417.4	1286.5	745.6	212.0
ADJUSTMENTS	0.0	0.0	12.9	-42.7	29.8
TOTAL	2661.2	417.4	1299.3	702.9	241.8

TABLE A-3
(CONTINUED)
ALLOCATION OF FY82 ALTERNATIVE PROGRAM COSTS
FY76 CONSTANT DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	BILL/GOV'T
R&D		74.3	1.5	46.6	18.2	8.0
PER	CENTERS	43.0	0.0	31.0	4.3	7.7
	ICBERS	133.0	1.5	71.0	43.4	17.1
	FSS	57.0	0.0	2.8	54.1	0.0
	BAVADS	71.0	0.0	38.3	23.4	9.2
	OTHER	29.0	0.0	19.4	9.6	0.0
	TOTAL PER	333.0	1.5	162.6	134.8	34.1
OSB	CENTERS	522.4	54.0	243.7	144.0	80.6
	TECHNS	498.3	39.7	227.9	201.8	28.9
	FSS	100.7	3.6	4.6	82.7	9.6
	CIBER	55.9	6.2	23.1	20.8	5.8
	TOTAL OSB	1177.3	103.5	499.5	449.4	124.9
SUPPORT	ISS	150.0	41.6	50.9	45.8	12.7
	ACB P ST	168.5	168.5	0.0	0.0	0.0
	ACB RRD	10.5	10.5	0.0	0.0	0.0
	DPV DIS	7.6	0.0	6.9	1.9	0.9
	A-P ADD	25.5	2.0	20.1	3.4	0.9
	CERT TBN	87.5	25.1	29.5	25.8	7.1
	DIS, SES	155.0	30.2	64.0	47.4	13.4
	TOTAL SUP	605.6	277.9	169.4	124.2	34.1
R&D		20.3	20.3	0.0	0.0	0.0
PER CAP AP		28.4	0.0	0.0	0.0	0.0
GRANTS		463.0	0.0	396.3	66.6	0.0
	TOTAL	2708.9	433.0	1274.8	793.3	201.1
ADJUSTMENTS		0.0	0.0	12.7	-64.5	31.7
TOTAL		2701.9	433.1	1287.2	748.8	232.8

TABLE A-3
(CONTINUED)
ALLOCATION OF FIVE ALTERNATIVE PROGRAM COSTS
BY 1976 CONSTANT DOLLARS IN BILLIONS

	TOTAL	PUBLIC	A.C.	G.I.	HIL/GOVT
PER	74.3	1.5	46.6	18.2	8.0
PER	CHURCHES 100BRS FSS DAVIDS OTHER	61.0 122.0 32.0 90.0 36.0	0.0 1.5 0.0 0.0 0.0	43.9 65.1 1.6 48.6 25.5	6.1 39.8 30.4 29.7 12.5
ICPAI, FSS	343.0	1.5	188.6	918.5	38.3
OSB	CHURCHES 100BRS FSS OTHER	507.1 511.3 96.5 56.4	55.2 40.4 3.6 6.2	235.7 229.3 6.6 20.7	951.1 214.0 79.0 19.6
	TOTAL OSB	1176.2	105.4	490.4	463.7
SUPPORT	16B ACB P ST ACB RRD FIV DIS B-P RRD CART TBB DIS. SES	147.0 176.0 91.2 7.6 26.6 87.9 155.2	46.6 176.0 0.0 0.0 2.0 25.6 30.2	96.6 0.0 0.0 4.9 21.0 29.2 63.4	46.3 0.0 0.0 1.9 3.6 26.9 49.0
	TOTAL SUP	612.3	290.0	865.3	125.6
PERD		20.3	0.0	0.0	0.0
PER CAP AP	926.4	26.4	0.0	0.0	0.0
GRANTS	463.7	0.0	396.5	67.1	0.0
TOTAL	2718.2	447.2	1283.4	793.1	194.5
ADJUSTMENTS	0.0	0.0	12.6	-44.6	38.7
TOTAL	2718.2	447.2	1296.3	748.5	226.2

TABLE A-3
(CONTINUED)
ALLOCATION OF FY66 ALTERNATIVE PROGRAM COSTS
FY76 CONSTANT DOLLAR: IN MILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	MIL./GOMI
NSD	74.3	1.5	46.6	18.2	8.0
162					
CENTERS	116.0	0.0	83.5	11.6	20.9
ICBMS	115.0	1.5	61.3	37.5	16.8
PSS	87.0	0.0	0.8	16.1	0.0
NAVIDS	62.0	0.0	33.5	20.5	8.1
CIBBS	35.0	0.0	23.4	11.5	0.0
TOTAL 162	345.0	1.5	202.6	97.2	43.7
068					
CENTERS	987.9	57.5	214.8	151.8	63.8
TOBRAS	515.9	40.8	229.3	220.1	25.7
PSS	92.2	3.6	4.4	75.3	6.8
CIBBS	53.5	6.2	21.3	21.3	4.7
TOTAL 068	1149.5	108.1	469.8	468.5	103.1
SUPPORT					
ICB	130.6	47.9	39.1	39.0	8.6
ADM P ST	186.6	186.6	0.0	0.0	0.0
ADM MED	11.9	11.9	0.0	0.0	0.0
CIV DIR	7.6	0.0	4.9	1.9	0.8
A-P ADM	27.6	2.0	21.9	3.7	0.9
CIVP TBN	85.9	25.1	27.9	27.0	5.9
DIR. SES	651.9	30.2	68.2	49.2	11.3
TOTAL SUP	606.3	303.7	155.0	120.9	26.7
NSD					
20.3	20.3	0.0	0.0	0.0	0.0
NTL CAP AP					
28.4	28.4	0.0	0.0	0.0	0.0
GRANTS					
455.1	0.0	388.8	66.2	0.0	
TOTAL	2678.9	463.6	1262.8	771.1	181.5
ADJUSTMENTS	0.0	0.0	12.6	-43.5	30.8
TOTAL	2678.9	463.6	1275.4	727.6	212.3

TABLE A-4
(CONTINUED)
ALLOCATION OF FY78 ALTERNATIVE PROGRAM COSTS
CURRENT DOLLARS IN MILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	MIL/GOVT
PERIOD		85.0	1.7	53.3	20.8	9.2
PERIOD	CENTERS	62.1	0.0	44.7	6.2	11.2
PERIOD	ICBERS	86.8	1.7	44.9	27.4	10.8
PERIOD	FSS	47.1	0.0	2.4	44.6	0.0
PERIOD	DATAIDS	54.6	0.0	29.6	18.1	7.1
PERIOD	010022	28.5	0.0	19.1	9.4	0.0
PERIOD	TOTAL PERIOD	277.3	1.7	140.7	105.9	29.1
PERIOD	CENTERS	550.3	59.8	273.3	123.9	101.2
PERIOD	100022	508.4	43.6	241.8	184.5	34.5
PERIOD	FSS	122.6	4.1	6.0	100.5	11.9
PERIOD	010022	72.9	7.1	31.8	25.0	9.0
PERIOD	TOTAL PERIOD	1258.2	114.6	553.0	433.9	156.6
SUPPORT	1600	165.1	42.4	59.3	46.5	16.8
SUPPORT	ADB P SR	172.4	172.4	0.0	0.0	0.0
SUPPORT	ADB RBD	10.4	10.4	0.0	0.0	0.0
SUPPORT	EPV DIN	6.7	6.0	5.6	2.2	1.0
SUPPORT	A-P ADB	27.0	2.3	24.2	3.6	0.0
SUPPORT	CPBT FBN	93.0	26.7	31.6	24.1	8.6
SUPPORT	EDB, SES	167.3	34.5	70.5	65.9	16.4
SUPPORT	TOTAL SUP	643.8	290.7	188.2	122.1	42.7
PERIOD		23.3	23.3	0.0	0.0	0.0
PERIOD	MIL CAP AP	32.5	32.5	0.0	0.0	0.0
GRANTS		555.0	0.0	476.0	77.0	0.0
TOTAL	2875.1	464.5	1413.2	759.8	237.6	
ADJUSTMENTS	0.0	0.0	14.1	48.5	30.4	
TOTAL	2875.1	464.5	1427.3	715.3	268.0	

TABLE A-4
(CONTINUED)
ALLOCATION OF FEDERAL ALTERNATIVE PROGRAM COSTS
CURRENT DOLLARS IN MILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	FED/GOV'T
RGD	94.9	1.9	59.5	23.2	10.2
FEE					
CITIZENS TAXERS	50.3 130.7	0.0 1.9	36.2 69.6	5.0 42.5	9.0 16.7
FSS	66.7	0.0	3.3	63.4	0.0
BAVARD	184.0	0.0	61.6	37.6	14.8
OTHER	30.3	0.0	20.3	10.0	0.0
TOTAL FEE	392.0	1.9	191.0	158.5	40.6
06B					
CITIZENS TAXERS	649.6 605.3	65.4 50.6	313.2 286.2	160.0 230.1	111.0 38.4
FSS	834.1	4.6	6.5	810.2	12.8
CITRUS	84.0	7.9	36.3	30.0	9.7
TOTAL 06B	1473.0	928.5	642.2	530.3	872.0
SUPPORT					
ADB P ST	192.7	50.2	68.1	56.2	16.2
ADB BBD	202.6	202.6	0.0	0.0	0.0
EVV DIR	12.2	12.2	0.0	0.0	0.0
A-P ADD	9.7	0.0	6.2	2.4	1.1
CENSUS TAB	31.6	2.6	25.0	6.0	0.0
DIR. SES	108.6	32.1	37.1	29.8	9.6
DIR. SES	193.6	38.6	81.3	55.7	16.1
TOTAL SUP	750.9	338.8	217.7	148.2	47.0
PERIOD					
	26.0	26.0	0.0	0.0	0.0
NET CAP AP	36.3	36.3	0.0	0.0	0.0
GRANTS	625.0	0.0	537.9	87.1	0.0
TOTAL ADJUSTMENTS	3398.1 0.0 3398.1	532.6 0.0 532.6	1648.3 16.5 1664.8	947.4 -54.4 893.0	269.8 37.9 307.7

TABLE A-4
(CONTINUED)
ALLOCATION OF FY82 ALTERNATIVE PROGRAM COSTS
CURRENT DOLLARS IN BILLIONS

		TOTAL	PUBLIC	A.C.	G.A.	HIL/GOV'T
ED		106.0	2.1	66.4	26.0	11.4
FED						
FED	CENTERS	61.8	0.0	44.5	6.2	18.1
	10BERS	184.4	2.1	98.4	60.2	23.7
	FSS	75.2	0.0	3.8	71.4	0.0
	BAVADS	93.6	0.0	50.6	30.9	12.2
	CITER	38.3	0.0	25.6	12.6	0.0
	TOTAL FED	453.2	2.1	222.9	181.3	47.0
OSB						
OSB	CENTERS	748.9	77.0	367.5	205.4	115.0
	10BERS	780.5	56.6	325.0	287.8	41.2
	FSS	143.7	5.1	6.9	118.0	13.7
	OTHER	79.8	8.8	33.0	29.7	8.2
	TOTAL OSB	1678.9	147.6	712.3	640.8	176.1
SUPPORT						
SUPPORT	ADM F ST	285.3	59.3	72.6	65.3	18.1
	ADM BRD	240.3	0.0	0.0	0.0	0.0
	DEV DIR	84.9	14.9	0.0	0.0	0.0
	A-P ADM	10.8	0.0	6.9	2.7	1.2
	CENT TBN	36.4	2.9	28.7	4.8	0.0
	DIR. SCS	128.8	35.8	42.0	36.8	10.2
	TOTAL SUP	863.5	43.1	98.3	67.5	99.1
FEED						
	FEED	29.0	29.0	0.0	0.0	0.0
HTL CAP AP						
	HTL CAP AP	40.5	40.5	0.0	0.0	0.0
GRANTS						
	GRANTS	675.0	0.0	577.9	97.1	0.0
TOTAL ADJUSTMENTS						
	TOTAL ADJUSTMENTS	3846.1	617.6	1821.0	1122.4	285.1
		0.0	0.0	18.2	-63.1	44.9
	TOTAL	3846.1	617.6	1839.3	1059.3	330.0

TABLE A-4
(CONTINUED)
ALLOCATION OF FY84 ALTERNATIVE PROGRAM COSTS
C. OPERATING EXPENSES IN MILLIONS

	TOTAL	PUBLIC	A.C.	G.A.	MIL/GOV'T
NET	117.7	2.4	73.8	28.8	12.7
552	CENTERS ICBES FSS CTERS	95.6 183.2 45.2 127.2 53.7	0.0 2.3 0.0 0.0 0.0	68.9 97.7 2.3 68.7 36.0	9.6 59.7 43.0 42.0 17.7
	NAVIDS OTHER	127.2 53.7	0.0 0.0	43.0 42.0	0.0 0.0
	TOTAL FEE	504.9	2.3	273.5	171.9
068	CENTERS TOWERS FSS CTERS	819.0 609.9 152.6 81.5	87.4 64.0 5.7 9.8	373.4 363.2 7.3 32.8	239.4 339.0 125.1 31.0
	TOTAL 068	1663.1	167.0	776.7	734.5
SUPPORT	16B ADM P ST ADM HED DEV DIS A-P ADB CENT TBN ELB, SES	232.9 280.0 17.7 12.0 42.1 939.3 245.9	71.0 280.0 17.7 0.0 3.2 39.8 47.8	74.2 0.0 0.0 7.7 33.3 46.3 100.4	70.1 0.0 0.0 3.0 5.6 42.6 77.5
	TOTAL SUP	969.9	459.4	261.8	198.9
FEED		32.2	0.0	0.0	0.0
MIL CAP AP		45.0	45.0	0.0	0.0
GRANTS		740.0	0.0	632.9	107.1
TOTAL ADJUSTMENTS	4272.8 0.0 4272.8	708.2 0.0 708.2	2018.7 20.2 2038.9	1241.3 49.7 1171.5	304.6 49.7 354.3
TOTAL					

TABLE A-4
(CONCLUDED)

ALLOCATION OF FY86 ALTERNATIVE PROGRAM COSTS

	TOTAL	PUBLIC	A.C.	G.A.	MIL/GOV
REF	134.0	2.6	82.1	32.1	14.1
PER					
CITIERS	201.3	0.0	144.9	20.1	36.2
TOWERS	190.5	2.5	601.5	62.0	24.4
PSS	26.3	0.0	6.3	25.0	0.0
NAVIDS	96.1	0.0	51.9	31.7	12.5
OISRS	54.2	0.0	36.3	17.9	0.0
TOTAL PER	560.4	2.5	336.0	156.8	73.2
06B					
CITIERS	860.2	101.4	378.6	267.7	112.5
TOWERS	902.6	71.9	404.3	388.0	45.4
PSS	162.5	6.3	7.7	132.8	15.6
CITERS	98.3	10.9	37.6	37.5	8.3
TOTAL 06B	2026.6	190.6	828.2	826.0	161.7
SUPPORT					
15B	237.4	84.4	69.0	68.8	15.1
ADM & ST	329.0	329.0	0.0	0.0	0.0
ADM BBD	24.0	21.0	0.0	0.0	0.0
EFV DIS	13.4	0.0	0.6	0.0	0.0
S-P ADA	46.7	3.5	38.6	3.3	1.5
CNET TBN	158.5	44.3	6.6	0.0	0.0
DISR, 565	267.9	53.2	49.2	47.6	10.4
TOTAL SUP	1068.8	535.5	107.9	86.7	20.0
PERD					
	35.9	35.9	0.0	0.0	0.0
HTL CAP AP	50.1	50.1	0.0	0.0	0.0
GRANTS					
	805.0	0.0	687.6	417.2	0.0
TOTAL	4685.8	817.9	2207.5	1345.2	316.0
ADJUSTMENTS	0.0	0.0	22.1	-75.9	53.8
TOTAL	4685.8	817.1	2229.5	1269.3	369.8

APPENDIX B

GLOSSARY

Acronym

A.C./AC	Air Carrier
A-P/AP/ARPT	Airport
AAT	FAA Air Traffic Service
ADAP	Airport Development Aid Program
ADM/ADMIN	Administration
ADV	Advisory
AFTN	Aeronautical Fixed Telecommunications Network
AOPA	Aircraft Owners and Pilots Association
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Traffic Control System
ASC	Administrative Sciences Corporation
ASR	Airport Surveillance Radar
ATC	Air Traffic Control
AVP	FAA Office of Aviation Policy
C-AP	Capitol Airports
CAB	Civil Aeronautics Board (see also TRACAB)
CAP	Capitol
CENT	Centralized
CONUS	Continental United States
CSC	Computer Sciences Corporation
CTR	Center (En Route)
DCA	Washington National Airport
DCS	Data Communications System
DEV	Development
DIR	Direction
DME	Distance Measuring Equipment
DOD	Department of Defense
DOT	Department of Transportation
E&D	Engineering and Development
F ST/FLT STDS	Flight Standards
F&E	Facilities and Equipment
F,E&D	Facilities, Engineering and Development
FAA	Federal Aviation Administration
FAC	Facility

Acronym

R&D	Research and Development
R&M	Relocation and Modification
R, E&D	Research, Engineering and Development
RCAG	Remote Communications, Air to Ground
RCS	Radio Communications System
RTR	Remote Transmitter/Receiver
S.E.E.	Standard Estimate of Error
S&S	Staff and Support
SRMC	Short Run Marginal Costs
SUP	Support
TACAN	Tactical Air Navigation Aid
TCS	Technical Control Service
TR	Traffic
TRACAB	Terminal Radar Control Facility Colocated with a Control Tower
TRACON	Terminal Radar Control Facility
TRN	Training
TWEB	Transcribed Weather Broadcasts
TWR	Tower (Terminal)
U.S.	United States
UG3RD	Upgraded Third Generation
UHF	Ultra High Frequency
UNICOM	Aeronautical Advisory Station
VCS	Voice Communications System
VFR	Visual Flight Rules
VHF	Very High Frequency
VOR	VHF Omni-Range (Navigation Aid)
VORTAC	Colocated VOR and TACAN

APPENDIX C

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